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Case Study

UNLOCKING RELIEF: *PANCHAKARMA'S* POTENTIAL IN HEREDITARY SPASTIC PARAPLEGIA

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ABSTRACT
Hereditary Spastic Paraplegia (HSP) is a group of rare, inherited neurological disorder characterized mainly by progressive stiffness and weakness in the legs. It occurs due to the degeneration of the axons in the spinal cord responsible for motor control. It can be inherited in different ways (autosomal dominant, autosomal recessive, or X-linked), and symptoms usually worsen gradually over time. There is currently no cure, but physical therapy, medications, and assistive devices can help manage symptoms. While classical Ayurvedic texts do not directly correlate this condition, it can be understood within the broader framework of *Vatavyadhi*, specifically as *Kaphavrutha Vyana Vata* based on symptoms like bilateral lower limb weakness, stiffness, and heaviness. In present case, the condition was managed using *Sarvanga Abhyanga, Dashamoola Kashaya Seka, Mustadi Yapana Basti* in *Kalabasti pattern,* and *Shastikashali Pinda Sweda*. Emerging clinical evidence highlights *Panchakarma* therapy as a transformative Ayurvedic intervention, demonstrating significant improvements in patients' quality of life.

INTRODUCTION
Hereditary spastic paraplegia (HSP), or familial spastic paraparesis, is a rare genetic neurological disorder causing progressive weakness and stiffness in the legs due to nerve fiber degeneration in the spinal cord[1]. It mainly affects the corticospinal tracts and posterior columns, leading to impaired movement. HSP has an estimated global prevalence of 1-10 cases per 100,000, with autosomal dominant forms (like SPG4 in Europe) being most common (70% of cases), though autosomal recessive and X-linked types also occur, some showing population-specific founder effects. It is caused by mutations in over 80 genes (SPG1–SPG80), with the most common forms including SPG4, SPG3A, SPG11, and SPG5A

Types
1. Pure HSP– Only motor symptoms (spasticity, weakness, hyperreflexia).
2. Complex HSP– Additional neurological features (ataxia, seizures, cognitive decline, peripheral neuropathy).

Pathophysiology involves axonal degeneration in corticospinal tracts and dorsal columns, caused by impaired axonal transport (e.g., spastin-related microtubule dysfunction in SPG4), with some subtypes showing Mitochondrial dysfunction and lipid metabolism abnormalities[1]. The most commonly affected genes in HSP are Spastin (SPAST) and Atlastin (ATL1). Spastin regulates microtubule remodelling- its dysfunction disrupts axonal transport, damaging motor neurons. Atlastin maintains ER membrane fusion; its impairment causes ER stress, protein misfolding, and neuronal failure[2]. Symptoms include progressive leg weakness and spasticity (difficulty walking), hyper-reflexia, Positive Babinski sign, urinary urgency (due to spinal cord involvement). complex HSP includes intellectual disability, ataxia and optic neuropathy[3].

While Hereditary Spastic Paraplegia (HSP) is not explicitly described in Ayurvedic classics, its clinical presentation aligns with the broader spectrum of *Vatavyadhi*. In the current case, the symptomatology- bilateral lower limb weakness, abnormal gait, stiffness, and heaviness- suggests a

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manifestation of *Kaphavruta Vyana Vata*, warranting a tailored *Panchakarma* approach for management.

Case Report

Chief Complaint

C/O difficulty in walking and weakness in bilateral lower limbs since 2 years.

Associated Complaints

A/W stiffness and heaviness of B/L lower limbs since 2 years.

Past History

K/C/O hypertension since 6 months.

History of Present Illness

A male patient aged 55 years, K/C/O hypertension since 6 months was apparently normal 2 years ago. He initially developed weakness in left lower limb, then right lower limb. Gradually he found difficulty in walking. It is associated with stiffness and heaviness of bilateral lower limbs. He also complains of pain in lower back which was non-radiating in nature. He approached several physicians for the same and took medications but found no relief. So, he approached SJGAUH for further management.

Table 1: Personal history

Name – XYZ	Sleep – Disturbed
Age– 55 years	Bowel habit – Regular, soft
Sex– Male	Appetite – Good
Marital status– Married	Weight -76 kg
Occupation– Hotel Manager	Height – 168 cm
Bala – Madhyama	Addiction – alcohol and smoking since 20 years, left since 6 months

Table 2: *Asthasthana Pareeksha*

Nadi – 82/min	*Shabda- Prakruta*
Mutra- Prakruta, 4-5 times/day	*Sparsha- Anushna Sheeta*
Mala- Prakruta, once/day	*Druk- Prakruta*
Jihwa- Ishat Lipta	*Akruti- Sthula*

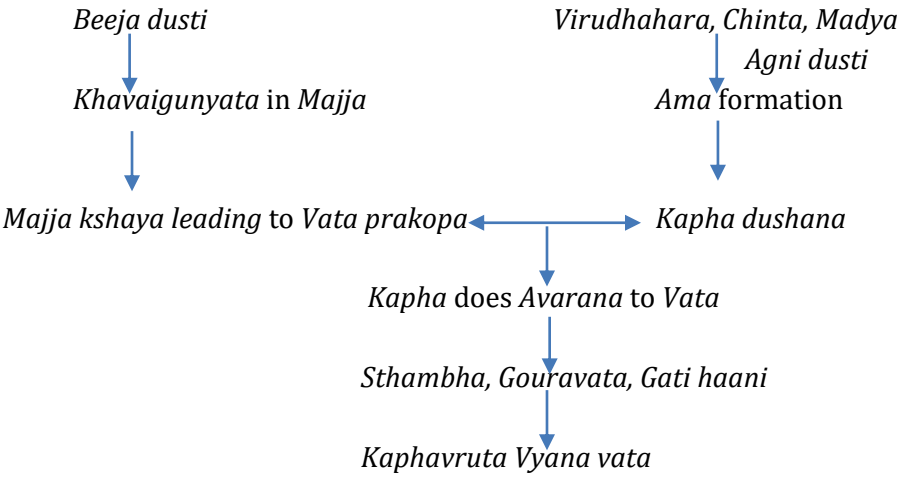
Table 3: *Dashavidha Pareeksha*

Prakruti – Pitta Vataja	*Pramana – Adhika*
Vikruti – Vata Kaphaja	*Satva – Madhyama*
Sara – Madhyama	*Satmya – Katu Rasa Pradhana*
Samhanana – Avara	*Ahara Shakthi* *Abhayavarana Shakthi- Pravara* *Jarana Shakthi- Madyama*
Vaya – Madhyama	*Vyayama Shakthi – Avara*

Table 4: *Nidana Panchaka*

Nidana	*Beeja Dushti, Chinta, Madya, Virudhahara*
Poorvaroopa	*Avyakta*
Rupa	Difficulty in walking and weakness in bilateral lower limbs, *Sthamba, Guruthva*
Upashaya Anupashaya	Nothing specific

Samprapti



Samprapti Ghataka

Table 5: *Samprapti Ghataka*

Dosha	*Vata, Kapha*
Dushya	*Rasa, Mamsa, Asthi, Majja*
Agni	*Jataraagni, Dhatvagni*
Ama	*Jataragni* and *Dhatvagni mandya janya ama*
Srotas	*Rasavaha, Mamsavaha, Majjavaha*
Srotodushti	*Sanga*
Udhbhavastana	*Pakwashaya*
Sancharastana	*Sarva Shareera*
Vyaktastana	*Adhoshakha*
Adhishtana	*Asthimajjagata*
Rogamarga	*Madhyama*
Sadhyaasadhyata	*Yapya*

Systemic Examination

- CVS- S1 and S2 heard, no murmurs heard
- R S – B/L NVBS heard, no added sounds heard
- GIT- P/A - Soft and non-tender

Central Nervous System Examination

i. Higher mental function: Conscious, oriented to time, place and person
   - Memory: Immediate, recent, Remote- intact
   - Speech - Intact

ii. Cranial Nerves: Within normal limits

iii. Sensory examination: No abnormality detected

iv. Motor examination

Table 6: Muscle tone

	Right	**left**
Upper limb	Normal	Normal
Lower limb	Spastic	Spastic

Table 7: Muscle power

	Right	**Left**
Upper Limb	5/5	5/5
Lower Limb	3/5	3/5

Table 8: Muscle bulk

	Right	Left
Biceps	28cm	28cm
Forearm	19cm	19cm
Mid-thigh	49cm	48cm
Calf	35.5cm	35cm

Table 9: Reflexes

	Right	Left
Biceps	++	++
Triceps	++	++
Supinator	++	++
Knee	+++	+++
Ankle	+++	+++
Plantar	Extensor	Extensor

Table 10: Treatment protocol adopted

Treatment	Date	Duration
Sarvanga Abhyanga with *Maha Narayana Taila* followed by *Dashamoola Kashaya Seka*	03/07/24 - 07/07/25	5 days
Koshtashodhana with *25ml Gandharva Hastadi Eranda Taila*	08/07/24	1 day
Niruha Basti with *Mustadi Yapana Kashaya* and *Mamsarasa*, *Anuvasana* with *Maha Masha Taila*	09/07/24 – 16/07/24	10 days
Shashtika Shali Pinda Sweda	19/07/24 – 25/07/24	7 days

Mustadi yapana basti

Honey	50 ml
Saindava	10 gm
Mahamasha taila	70ml
Shathapushpa kalka	30gm
Mustadi yapana Kashaya	240ml
Mamsarasa avapa	100ml
Total	500 ml

***Anuvasana basti* with *Mahamasha taila* – 60ml**

10/7	11/7	12/7	13/7	14/7	15/7	16/7	17/7	18/7	19/7
		N	N	N	N	N	N		
A	A	A	A	A	A	A	A	A	A

Shamanaushadhi

1. *Simhanada guggulu:* 1-1-1 A/F
2. *Ashwagandha Ksheerapaka:* 20ml – 0 – 20ml B/F
3. *Bruhat Vata Chintamani Rasa:* 1 – 0 – 1 A/F

OBSERVATION AND RESULTS

Table 11: Observation and Results

Treatment	Before treatment	After Treatment
Dashamoola Kashaya Seka	Patient felt heaviness and stiffness of body	Heaviness and stiffness reduced by 50%, lightness of body
Mustadi Yapana Basti	Patient difficulty in walking more than 500m.	Patient was able to walk up to 1km.
Shashtika Shali Pinda Sweda	Patient C/O weakness of B/L lower limbs and difficulty in walking	Patient felt improvement in weakness and ability to walk by 75%

Table 12: Improvement in muscle power

	Before Treatment	After Treatment
Right Lower Limb	3/5	4/5
Left Lower Limb	3/5	4/5

Table 13: Timed up and go test

	Before treatment	After Treatment
Time taken to get up, walk 3m, turn back and sit down	15 seconds	11 seconds

It is a simple clinical test that is used to assess mobility, balance, and fall risk by measuring the time it takes a person to rise from a chair, walk 3 meters, turn, walk back to the chair, and sit down.

DISCUSSION

On Disease

- *Kaphavṛuta Vyana Vata* is a pathological condition in *Ayurveda* where *Vyana Vayu* - a sub-type of *Vata* responsible for circulation, motor functions, and nerve impulses, gets obstructed (*Avṛuta*) by *Kapha Dosha*, leading to specific clinical manifestations.
- *Acharya Sushrutha* explains the functions of *Vyana vata* as– it travels *Sarvashareera*, helps in *Rasadi samvahana* and responsible for all type of *Chesta* (movements).[4] When *Kapha* blocks *Vyana Vata*, it leads to- stiffness (*Stambha*), heaviness (*Gaurava*), loss of movement (*Chesta Nasha*) and numbness (*Suptata*). Treatment focuses on removing *Kapha avarana*, restoring *Vata* movement, and nourishing the *Dhathus*.
- In the present case, initially *Rookshana chikitsa* was adopted in the form of *Parisheka* to remove the *Kaphavarana*, once the *Avarana* was removed and disease become *Kevala Vataja, Brihmana* line of treatment was adopted in the form of *Mustadi yapana basti* and *Shastika shali pinda sweda*

On *Chikitsa*

A. *Sarvanga Abhyanga* and *Dashamoola qwatha Parisheka–* *Abhyanga* with *Mahanarayana taila* and *Kayaseka* with *Dashamoola Kashaya* together exert a *Vatakapha-hara* effect by promoting the deep tissue penetration of medicated oils (as described by *Sushruta* and *Dalhana*) to pacify *Vata* and *Kapha*, and reduce stiffness (*Stambha*) through the combined *Snigdha-Ruksha* and *Ama-pachana* properties.

Mode of action

1. **Absorption Mechanism:** *Sushruta* describes how *Veerya* of *Dravya (Taila)* enters the body via a network of *Tiryak Dhamanis* linked to *Romakupa*, aided by *Bhrajaka Pitta*.
2. **Therapeutic Action:** Heat from *Kayaseka* dilates blood vessels, enhancing circulation to *Twak*, *Peshi*, and *Snayu*. This clears *Kaphavarana (Srotorodha)* in affected areas, restoring *Vyana Vata* movement and limb function.

B. *Mustadi yapana basti:* It is a specialized type of *Niruha basti* primarily used for *Vataja* disorders of *Dhathukshayaja samprapti*. It also aids in pain management and strengthening the body. It is prepared using *Kashaya* of *Musta* along with other herbs. *Musta* being the main ingredient– does *Vatahara*, reduces pain and improves digestion. It is *Mamsa* and *Bala janana* also acts as *Rasayana* which helps in nourishment of the *Ksheena dhathus.*

Mode of action

1. The primary herbs - *Musta, Bala, Ashwagandha* etc. possess *Vatahara* properties, while the *Yapana* effect aids in *Brimhana* of *Ksheena Dhatus,* particularly *Mamsa, Asthi,* and *Majja* and ingredients like *Ashwagandha, Shatavari,* and *Bala* provide *Balya* and *Rasayana* effect, along with *Srotoshodhana* effect of *Niruha basti*.
2. Key ingredients like *Musta* combats neuro-inflammation and neuropathic pain[6] by inhibiting COX-2 and prostaglandins[7], while *Bala* enhances immune-mediated neural repair[8], and *Ashwagandha* exerts potent neuroprotection-reducing cortisol-induced neurodegeneration[9], stimulating nerve regeneration[10], and synergistically boosting muscle strength through its anabolic action, creating a holistic shield for the nervous system

C. *Shastikashali Pinda Sweda:* A type of *Sankara Sweda*, combines nourishing (*Brihmana*), *Tridosha*-balancing, and *Snigdha-Guru-Sheeta* qualities by using boluses of boiled *Shastika Shali* rice and *Balamoola Ksheerapaka* to open skin pores, enhance drug absorption through sweating and vasodilation, and promote tissue repair with its rich protein, amino acid, and micronutrient content.

CONCLUSION

Hereditary Spastic Paraplegia (HSP) is a group of genetic disorders caused by mutations in genes such as spastin and alastin, leading to progressive lower limb spasticity and weakness. In Ayurveda, HSP closely aligns with *Vatavyadhi*, but its manifestation may also involve *Kapha* and *Pitta* imbalances depending on

symptom presentation. In the presented case, the patient's symptoms suggested *Kaphavruta Vyana* leading to stiffness, heaviness, and impaired motor function. Accordingly treatment was followed, initially mild *Rookshana* in the form of *Abhyanga* followed by *Parisheka* to remove *Kaphavarana*, then *Mustadi yapana basti* and *Shastikashali pinda sweda* to tackle *Vata dosha* and nourish the *Ksheena dhathus.*While modern medicine focuses on symptom management and genetic counselling, Ayurveda offers a constitutional approach- addressing *Dosha vishamya (Vata-Kapha)*, improving nerve function (*Majja Dhatu*), and preventing further degeneration through *Panchakarma* procedures.

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